

Menopause as a Critical Window for Understanding Alzheimer's Risk: Testing Feasibility & Acceptability of Digital Cognitive Assessment

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Key takeaway: Remote cognitive testing sensitive to early AD-related changes was feasible, acceptable, and sensitive to cognitive variability in midlife women.

Introduction

- Women account for approximately two-thirds of those living with **Alzheimer's Disease (AD)**.^[1]
- Midlife hormone changes, including **menopause** and **Menopause Hormone Therapy (MHT)**, may impact **cognitive health** and AD risk.^[2-6]
- Scalable methods that sufficiently capture **reproductive health** and cognitive tasks **sensitive to early AD** may overcome previous methodological limitations.
- Remote, independently** completed **online methods** can facilitate this research, but suitability must first be established in **midlife women**.

Study aim: To assess the **feasibility** and **acceptability** of an online, remote questionnaire and cognitive task battery among midlife MHT users ahead of **larger studies** testing menopause and MHT effects on cognition.

Methods

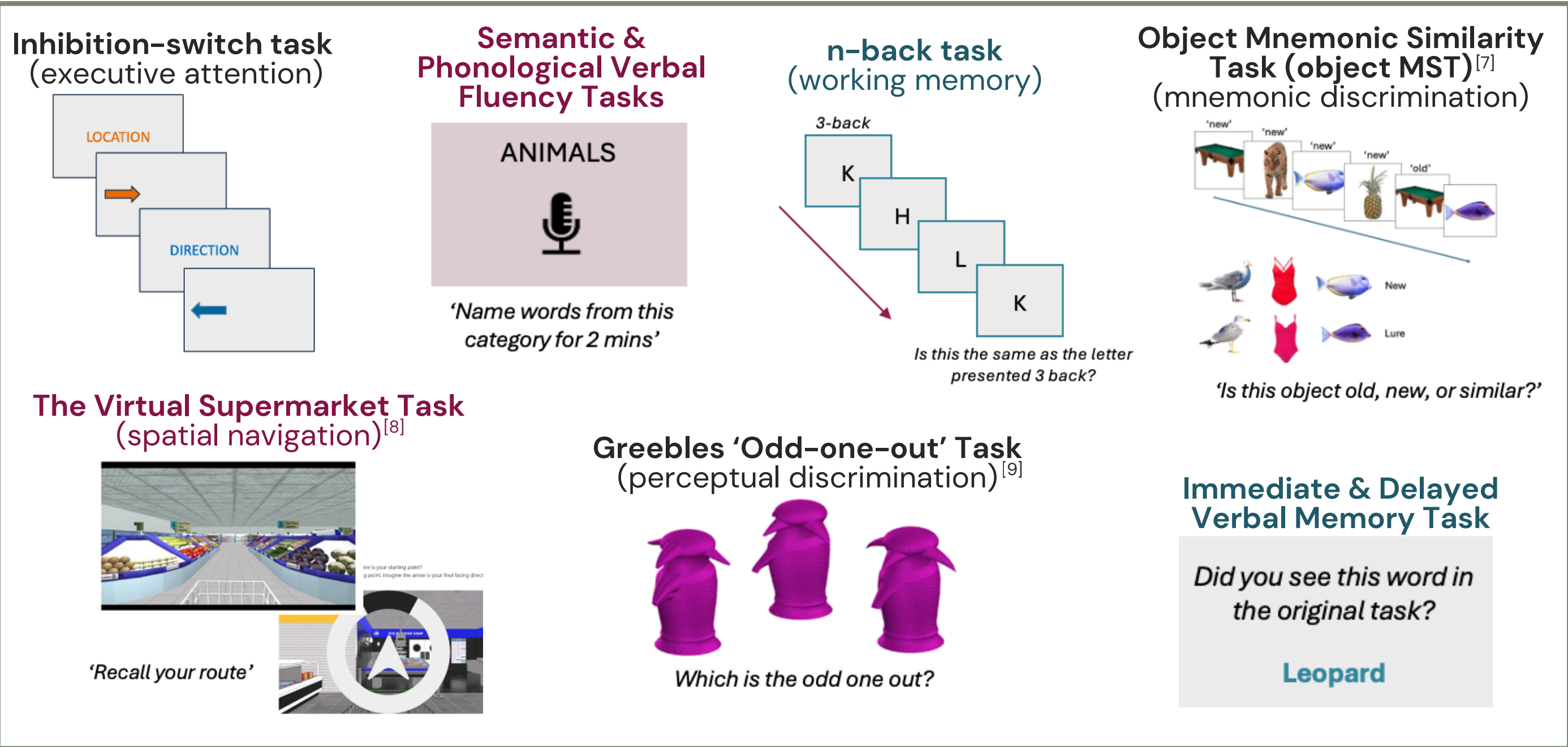
Who participated? Women who started **MHT** in the last 18 months.

What did they do? All completed an **online questionnaire, cognitive task battery** and feedback. **n = 6** completed semi-structured **interviews**.

Questionnaire (~15 mins), capturing:

- Menopause experience & staging
- Reproductive health
- Subjective cognition
- General health & lifestyle

Cognitive Tasks (~1 hour) assessing domains reliant on brain areas **first affected in AD**, including Medial Temporal Lobe regions.



Analysis: descriptive for quantitative data and thematic for qualitative data.

Results

Participant characteristics

n = 31; mean age = **47.58 years** (SD = 4.01, range 37-57); recruited from **11 English counties**.

Feasibility & acceptability

- Minimal** missing data and reported technical difficulties.
- 93%** agreed tasks were possible to complete.
- Question acceptability: **9.0/10**.
- Question comfort: **9.16/10**.

Participant flow & retention



Figure 1: Visualisation of participant study flow. Final analytical sample of n = 31 includes those completing the study or formally withdrawing.

Qualitative feedback highlights

- High acceptability of **remote** completion.
- Recommendations** for improving questionnaire relevance, task burden and usability.

Cognitive task performance

Tasks showed meaningful **performance variability**. Analysis examples below:

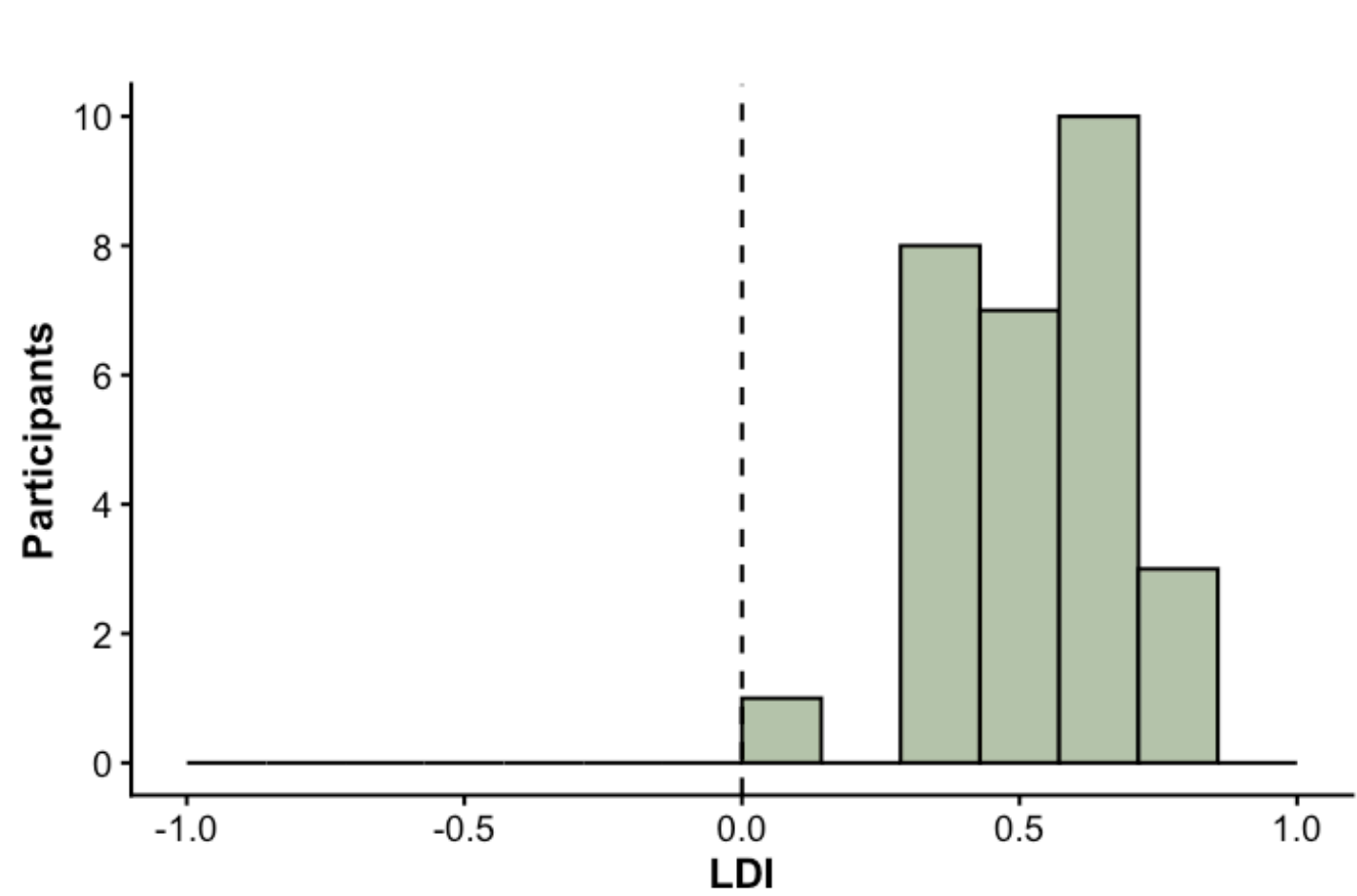


Figure 2: Object MST Lure Discrimination Index (LDI; mean = 0.517, SD = 0.165).

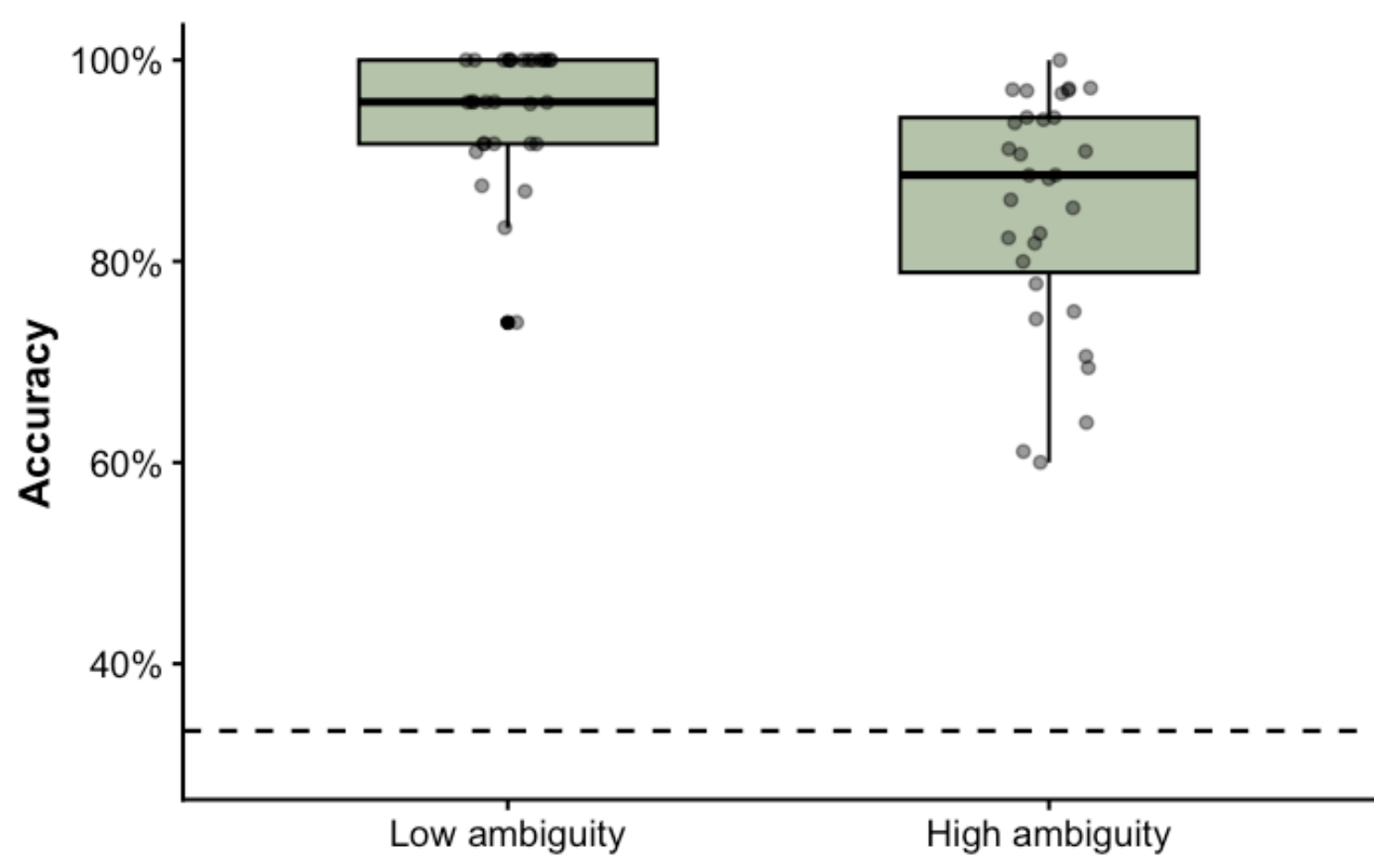


Figure 3: Greebles' accuracy by ambiguity condition: Low: M = 95.2%, SD = 6.1%; high: M = 85.4%, SD = 11.5%.

Post-analysis method refinement highlights

Feedback and refinement:

- Exogenous hormone** users difficult to stage → **separate** pathways for natural cyclers & exogenous hormone users.
- Cognitive & mental health** symptoms not fully captured → validated **measures added**.
- Task battery too long** → task battery **reduced** for future longitudinal study

Conclusion

- The online methods were **feasible** and **acceptable** in midlife MHT users.
- Tasks captured **meaningful variability**.
- Refined methods are now used in **larger studies** of menopause, APOEε4 and cognition, including **longitudinal** MHT studies.

Contact

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Why does this matter? Menopause is a potential window for identifying early cognitive changes associated with AD risk. Scalable, remote tools can enable larger and more inclusive studies of women's brain health.